Foraging Behaviour of *Acridotheres ginginianus*

A

SYNOPSIS

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1.0. Introduction

Mynas belong to family Sturnidae and genus *Acridotheres*. They are highly intelligent and adaptable birds, and also capable of learning to avoid dangerous situations by observing the behaviour of others and the species has a highly sophisticated communication system (Mock, 1998). Genus *Acridotheres* consists of nine species. Their distribution and geographical ranges are depicted in Table 1.

Table1- Distribution and Geographic range of Mynas

S.no.	Common name	Scientific name	Geographical range
1	Common myna	*Acridotheres tristis*	India, Bangladesh, Bhutan, China, Iran, Nepal, Malaysia, Pakistan, Singapore, Sri Lanka, Kazakhstan, Myanmar, Cambodia, Afghanistan and Thailand
2	Bank myna	*Acridotheres ginginianus*	India, Bangladesh, Bhutan, Myanmar, Nepal, Pakistan, Taiwan and China
3	Jungle myna	*Acridotheres fuscus*	India, Bangladesh, Bhutan, Malaysia, Myanmar, Nepal, Pakistan and Thailand
4	Great myna	*Acridotheres grandis*	India, China, Bangladesh, Bhutan, Myanmar, Thailand and Cambodia
5	Collared myna	*Acridotheres albocinctus*	India, China and Myanmar
6	Crested myna	*Acridotheres cristatellus*	China, Myanmar and Taiwan
7	Pale-bellied myna	*Acridotheres cinereus*	Indonesia
8	White-vented myna	*Acridotheres javanicus*	Indonesia
9	Black-winged myna	*Acridotheres melanopterus*	Indonesia

1.1. **Bank myna (*A. ginginianus*)**

The species name of the bird is based on the name given by Latham from a description by Pierre Sonnerat who described ‘Le petit Martin de Gingi’ in 1782. The common name is derived from their habit of nesting almost exclusively in the earthen banks of rivers where they excavate holes for making nests and breed in large colonies.(Ali and Ripley, 1983). Its nests have also been observed on trees, roofs of houses, railway stations, holes of walls and wells (Dhandhukia and Patel, 2016).

Bank myna is also known as the Ganga myna. It has bluish-grey body, black head and neck with orange spot behind eyes, orange beak and orange legs. The wing patches and tips of tail feathers are

pinkish and white. Sexes are not distinguishable in the field. Young birds have a browner head and neck. (Ali & Ripley, 2007; Bose & Das, 2012).

Systematic position

Kingdom- Animalia

Phylum- Chordata

Class- Aves

Order- Passeriformes

Family- Sturnidae

Genus- *Acridotheres*

Species- *ginginianus*

Plate-1 *A. ginginianus*

1.2. Habitat and Distribution

It is native to South Asia and is widely distributed throughout India, Pakistan, Bangladesh, Bhutan, Myanmar, Nepal, Taiwan and China (Table1). It has been introduced in Kuwait. In India, it has been reported in plains of northern and central India from the Himalayan foothills to a line from Mumbai to Balasore in Orissa, but not in peninsular India. It has been reported from Sultanpur in U.P. (Ali and Ripley, 2007).

Bank myna has been spotted in the riparian zone of Vishwamitri river, Vododara, Gujarat (Patel et al., 2017). It is found mainly in the vicinity of open waters and its usual habitat is man modified habitats like cultivated farmland and open country (Craig and Freare, 2020).

1.3. Habit

Bank mynas are predominantly ground feeders and omnivorous. They are gregarious, foraging in flocks. They feed on grains, small insects, larvae, fruit, seeds and provisioned food waste (Akhtar et al., 2016).

They feed on ripening crops such as sorghum, grape, pearl millet and a variety of insects, including crop pests such as Achaea janata caterpillars that feed on castor crop (Rasmussen and Anderton, 2005).

1.4 Conservation status

Its conservation status is Schedule IV of Wildlife Protection Act, India and Least Concern category according to the IUCN Red List of Threatened Species 2018.

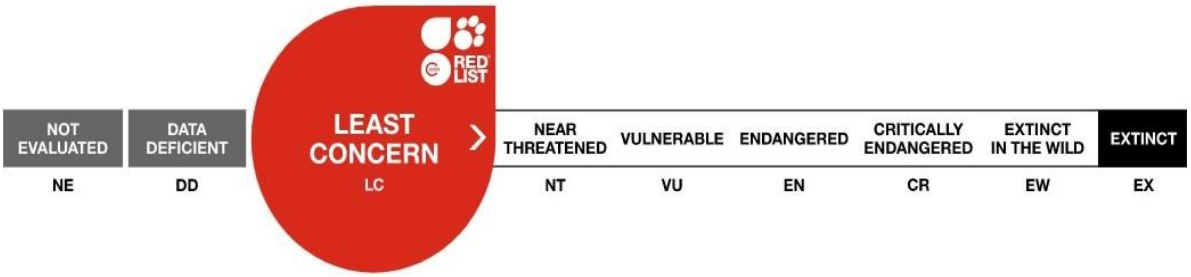


Fig-1 Conservation status of *A. ginginianus* (source: IUCN Red List of Threatened Species 2018)

2.0. Review of Literature

2.1 International status

Ahsan and Kabir (2011) studied the conservation priorities and breeding colonies of the *A. ginginianus* in Chapai Nawabganj district of Bangladesh.

2.2 National status

Simwat and Sidhu, (1974) studied the developmental period, nestling habits and month-wise feeding behaviour of *A. ginginianus* in Punjab. Dhindsa *et al.,* (1988) reported the mortality of birds, including bank myna, due to vehicles on roads in search of food in Punjab. Rasmussen and Anderton (2005) reported that bank myna feeds on crop pests such as *Achaea janata* whose caterpillars feed on castor. Patel (2010) opined that bank myna was a pest of pearl millet crop in Patan district, Gujarat. Thakor *et al*., (2011) studied diurnal activities of bank myna in winter season. Bose and Das, (2012) reported the habits, distribution and seasonal variation in reproductive structure of bank myna from Sultanpur area. Patel *et al.,* (2017) reported the abundance of bank mynas in the riparian zone of Vishwamitri river, Vadodara, Gujarat.

2.3 Need of the study

Review of literature reveals that there is no report on the foraging behaviour of *Acridotheres ginginianus*, although this aspect plays important role in cognitive ethology of species. There is no information about its intra-specific and inter-specific interactions while foraging, including their communication and vocalizations while group foraging. Detailed analysis of food and feeding behaviour of this insectivorous bird species is fundamental to assess its economic importance. Studies

on foraging behaviour are important to understand community structure, resource use pattern and co-existence in a particular habitat. Knowledge of food and feeding habit helps to identify the habitat characters and to determine the status of the species. It also provides necessary information which can be applied for the conservation and management of species.

3.0. Hypotheses

Null Hypothesis (H_{o1}):- There is no significant difference in the foraging behaviour of *Acridotheres ginginianus* in riparian and road side areas.

Alternate Hypothesis (H_{A1}):- There is a significant difference in the foraging behaviour of *Acridotheres ginginianus* in riparian and road side areas.

Null Hypothesis (H_{o2}):- There is no significant difference in the intraspecific and interspecific interactions of *Acridotheres ginginianus* during foraging behaviour in riparian and road side areas.

Alternate Hypothesis (H_{A2}):- There is a significant difference in the intraspecific and interspecific interactions of *Acridotheres ginginianus* during foraging behaviour in riparian and road side areas.

4.0. Objectives

1. To compare and analyze the foraging behaviour of *Acridotheres ginginianus* in riparian and road side areas.

2. To compare the intraspecific and interspecific interactions of *Acridotheres ginginianus* during foraging behaviour.

3. To identify the factors affecting foraging behaviour of *Acridotheres ginginianus.*

5.0. Methodology

It is a non-invasive and purely observational study; it does not require any ethical approval.

5.1 Sampling sites

The following types of foraging sites have been selected because a good number of bank mynas can be easily spotted:

I. Riparian

1. Rambagh area in Agra near Yamuna river (Fig-2)
2. Shahjahan Gardens in Agra near Yamuna river (Fig-3)

II. Roadside

3. Agra-Tundla Road 30km stretch (Fig-4)

4. Agra-Mathura Road along 60km stretch (including toll points) (Fig-5)

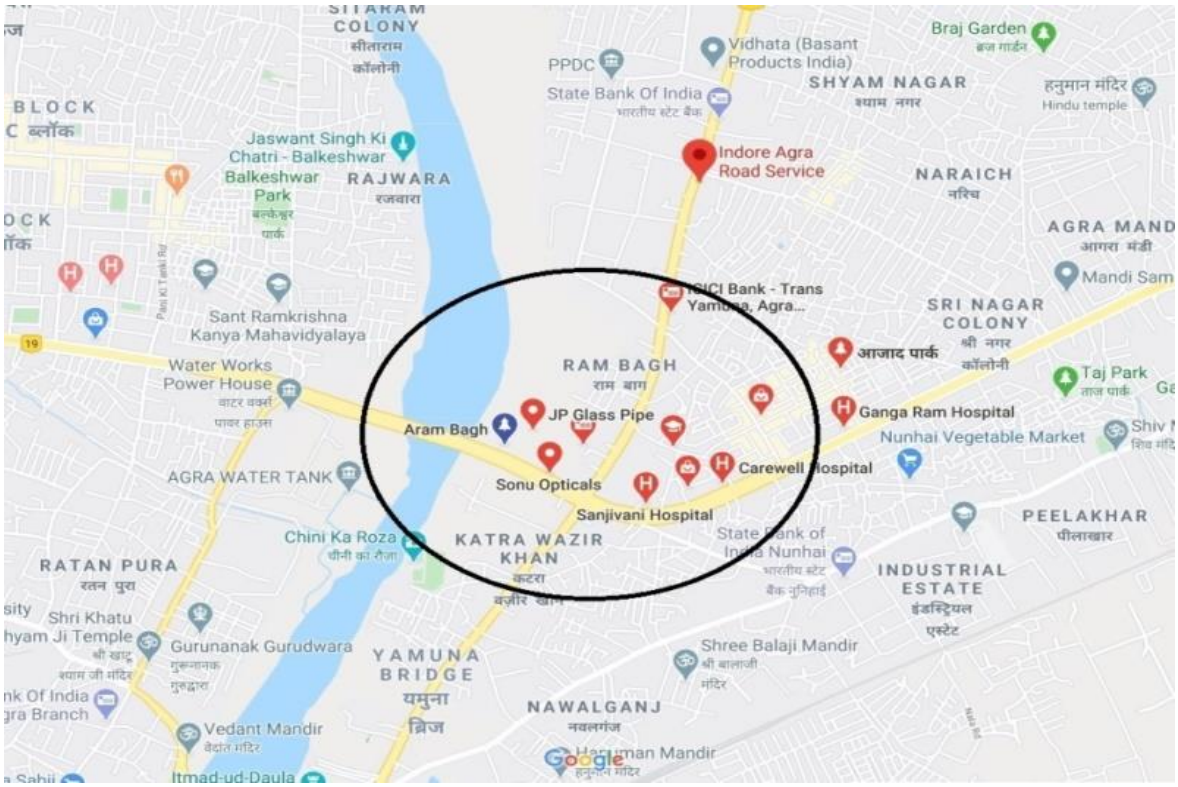


Fig.2 Riparian Site 1: Google map showing Rambagh area in Agra near Yamuna River

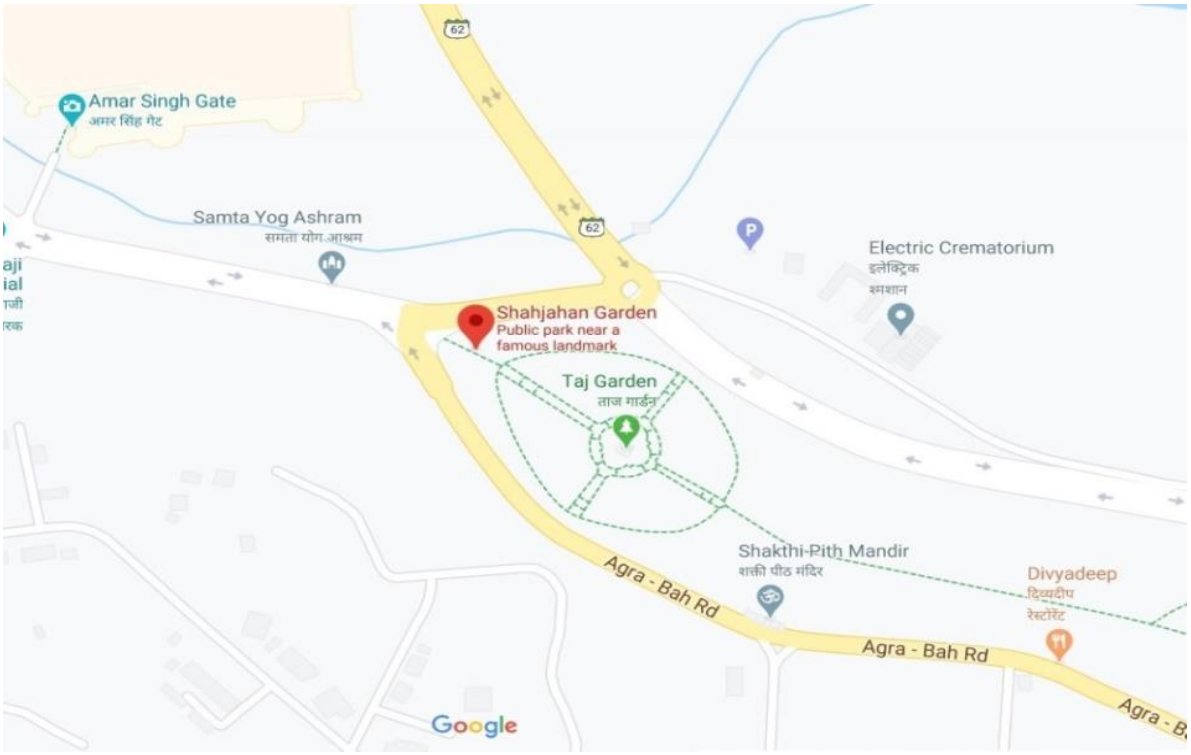


Fig.3 Riparian Site 2: Google map showing Shahjahan Gardens in Agra near Yamuna River

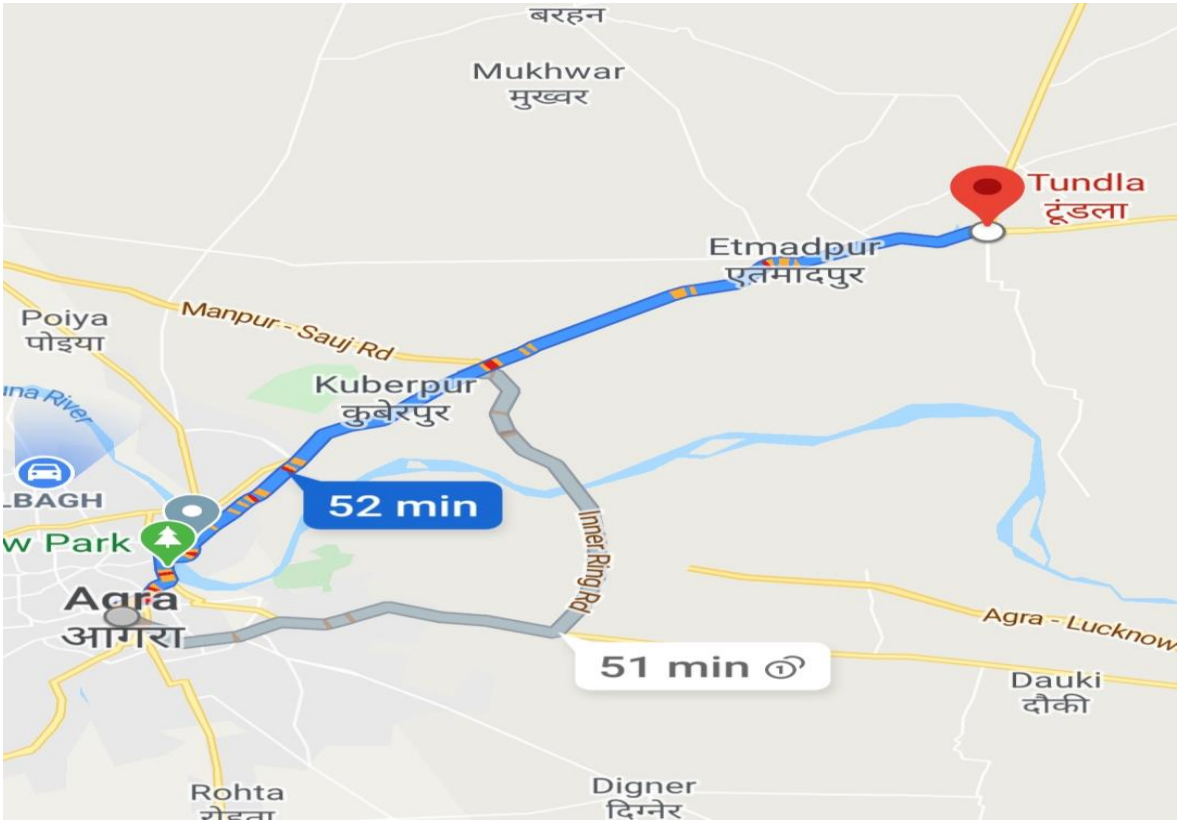
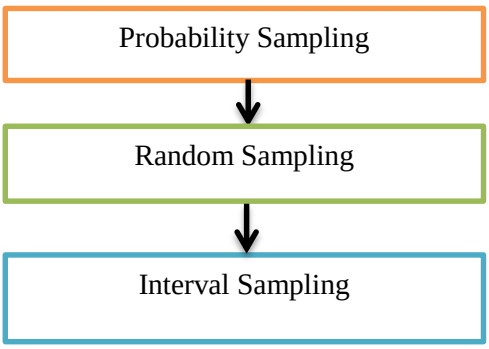


Fig-4 Roadside Site 1: Google map showing Agra-Tundla Road, a 30 km stretch

Fig-5 Roadside Site 2: Google map showing Agra-Mathura Road, a 60 km stretch (including toll point)

5.2 Sampling methods

Random sampling will be employed because *A. ginginianus* is a free ranging bird.



5.3 Behavioral sampling techniques

The following sampling techniques will be applied-

1. Scan sampling technique (Altman, 1973)
2. *Ad-libitum* sampling (Altman, 1973)

Activities of birds will be observed and recorded on the respective data sheets. Each action will be assigned a particular code to make the recording of data convenient. Each field observation of one hour will be divided into four equal time intervals of 15 min. each (10 min. for observation period with 5 min. interval for the preparation of next observation period) as described by Martin and Bateson, 1993.

5.4 Observation schedule

Daily observations will be taken throughout the diurnal period of 3 years across 5 seasons:

1. Spring (Feb-March)
2. Summer (April-June)
3. Monsoon (July-Sept)
4. Autumn (Oct-Nov)
5. Winter (Dec-Jan)

5.5 Tools and equipment

1. 45X optical zoom camera for still photography and videography
2. Notepad
3. Stopwatch

4. Behaviour coding software (Observer ^{XT} by Noldus Technologies)

5. Binoculars

6. Garmin GPS tracking device and GIS software

5.6 Targeted behaviours

1. Food preferences

2. Locomotion while foraging

3. Vocalization while foraging

4. Vigilance while foraging

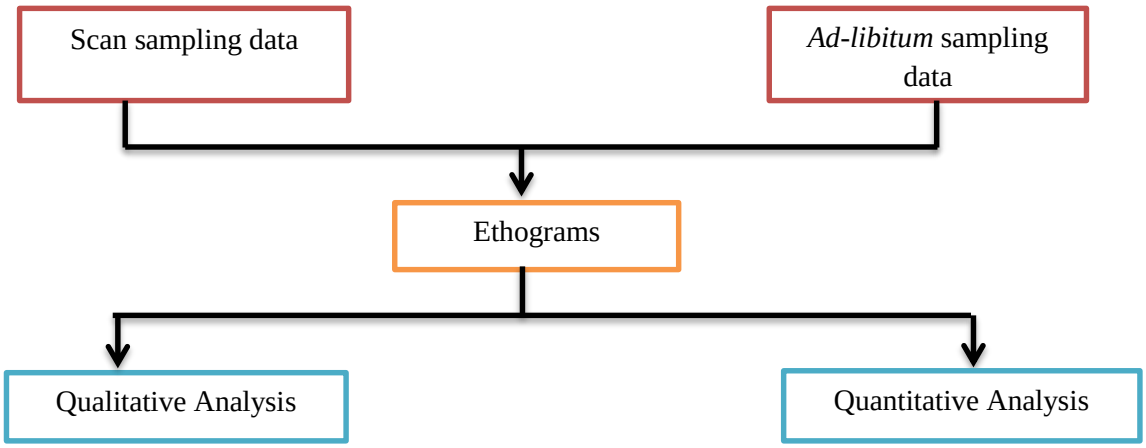
5. Intra-specific interactions while foraging - aggression, conflict, co-operation

6. Inter-specific interactions while foraging – aggression, conflict, co-operation

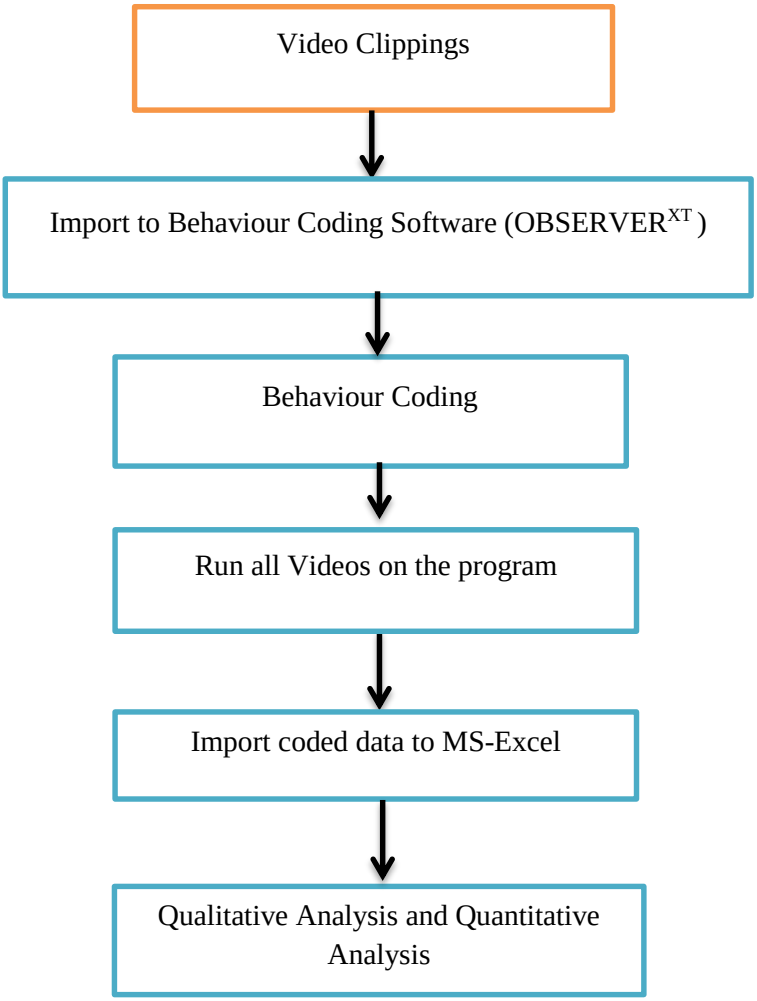
7. Foraging innovation

6.0. Data Interpretation

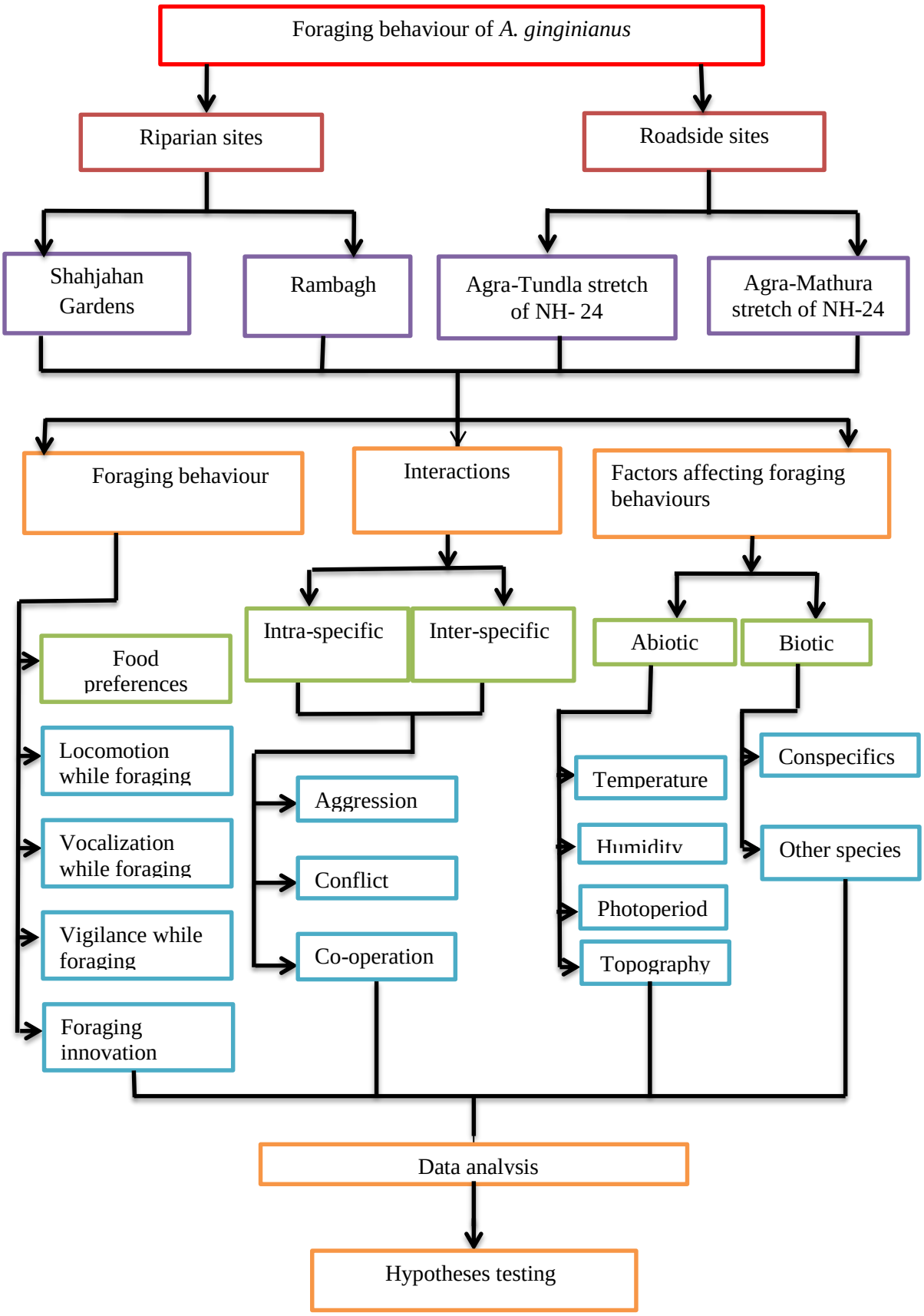
6.1 Manual Observations-



6.2 Video clippings


Video Clippings
Import to Behaviour Coding Software (OBSERVER XT)
Behaviour Coding
Run all Videos on the program
Import coded data to MS-Excel
Qualitative Analysis and Quantitative Analysis

6.3. Plan of Work



7.0. References

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